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DEALING WITH DUAL USE OF HBP RESEARCH – THE CITIZENS' PERSPECTIVE

Citizens across Europe endorse neuroscience research, which they find to be important and beneficial. However, they have concerns about its potential political, security, intelligence or military uses and its possible wider societal consequences and call for action from policy makers to address these concerns. This brief presents the fine line that European citizens want HBP and other neuroscience research projects to walk between civilian and PSIM research, along with the most common concerns held by citizens and the recommendations that citizens gave for addressing them.

PSIM USE AND THE HUMAN BRAIN PROJECT

The Human Brain Project (HBP) is an ambitious research and technology development project, which promises to deliver great research results in neuroscience, neurotechnology and brain-inspired ICT. Though the focus of the project is strictly civilian, some of the insights and technologies developed could be of interest to political, security, intelligence or military (PSIM) organisations.
This complex situation was the theme of the Danish Board of Technology's citizen consultation.

CONCERNS NEED TO BE ADDRESSED

The consultation showed that European citizens endorse research in neuroscience, neuro-technology and brain-inspired ICT, and many considered progress in research to be essential. However, they have serious concerns about potential PSIM use of this research and call for action, particularly from policy makers. It is important that HBP and similar research projects take these concerns seriously and address them.

The citizens themselves gave recommendations for how these concerns could be addressed. Common for these is that they call for action at the policy level. It was a general tendency, that the citizens wanted to see action from policy makers at project, funding or political level.
Most prominent was the call for regulation of research in neuroscience, neurotechnology and brain-inspired ICT. The focus should be on PSIM use and potentials hereof, but also on wider ethical aspects of research. For the regulation to have the desired impact, it should not be confined to single countries or projects but be international in scope. To facilitate practical implementation, it should

RECOMMENDATIONS

- Concerns should be taken seriously and addressed at project and policy level.
- Call for International regulation and ethics guidelines, as well as a standing monitoring and enforcing body.
- Openness about research and results, including better communication.
- Call for broader debate about what research should receive public funding, what it should be used for, and whose interests it should serve. To this end, more public engagement in research agenda setting is requested.
- Call for research on societal impacts of research

KEY POINTS

- Widespread support for research in neuroscience, neurotechnology and brain-inspired ICT.
- Concerns about the research' PSIM potential.
- Most common concerns: Surveillance, privacy and hacking; artificial intelligence; social and political control and manipulation.
- Also concerns about wider societal impacts.
- Openness about research and results widely supported.
- Issues should be addressed at policy level and involve the surrounding society.

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BACKGROUND FOR THE BRIEF:

This brief presents the results of the European citizen consultation on PSIM use of neuroscience research, carried out by the Danish Board of Technology in context of the work on PSIM use and neuroscience research taking place in the Ethics and Society subproject of the HBP.

The consultation enquired into the opinions, values, hopes and worries of European citizens regarding the questions that arise when neuroscience research could be used by others for political, security, intelligence or military (PSIM) purposes.

The consultation consisted of two concurrent parts. Firstly, an online citizen consultation promoted in Belgium, Bulgaria, Denmark, France, Germany, Italy, Lithuania, Malta, Portugal and Slovakia, running from September to December 2017, where a total of 2048 Europeans took part.
Secondly, full-day citizen workshops in Denmark, England, Germany, Italy, Lithuania, Malta, Portugal and Slovakia in November 2017 and March 2018, where a total of 241 European citizens took part.

contain ethics guidelines stipulating what constitutes ethically sound research and use. Enforcing the regulation should not just be left to the individual scientist. A recurrent suggestion was that there should be enforcement and steering mechanisms, for instance in the shape of a standing committee under EU auspice.

There were also calls for more openness from research projects and better communication. This was something that the citizens felt was currently missing. The citizens called for ways in which they could be informed about what research is being carried out, what the perspectives and risks are and what results are attained. In continuation of this, the citizens called for broader debate on what research should be funded, what it should be developed for and whose interests it should serve. This applied to all research, but particularly to publicly funded research. In this context, they called for more public participation in research agenda setting, so that the public which is affected by the research, also has a say in its development. On top of this, they requested more public participation in research. Furthermore, there were requests for research on the potential societal consequences of research in neuroscience, neurotechnology and brain-inspired ICT.

THE FINE LINE

The consultation showed that European citizens want the HBP and similar research projects to walk a fine line when it comes to civilian research that could be used for PSIM purposes.

The citizens are in favour of neuroscience research, which they consider important and beneficial. And almost all consider at least one example of how PSIM could be used acceptable. Either way, most find it inevitable that research like that in HBP will be used by PSIM institutions, should these wish to do so, though they were divided as to whether that was positive. This support, however, was mixed with serious concerns about the potential implications of the research, both in relation to PSIM use and wider societal consequences.

Many saw progress in research as essential, and thus supported collaboration with other brain research projects, though certain conditions should be met if these are financially affiliated with defence agencies. There was emphatic support for retaining the European Commission's Open Science-strategy, even for research that could have PSIM use. In fact, openness about research and its results, especially for research that is publicly funded, was pivotal for several citizens. And, as they already considered PSIM use to be inevitable, publicising research results were considered predominantly positive. Though, if they are financially affiliated with defence agencies, certain conditions need to be met. On the other hand, they find it unacceptable if an organisation receives funding through the HBP while at the same time being directly engaged in PSIM research. In general, they oppose public funding of research with PSIM purposes, and if researchers in the HBP deliberately contribute to PSIM research the citizens agree they should be subject to a sanction. So, the fine line, that citizens want the HBP and other similar neuroscience initiatives to walk, is

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between being open about research and results, as well as collaborating with other similar research initiatives, but at the same time keeping airtight separation from PSIM research, even though some PSIM uses are endorsed. Research in neuroscience, neurotechnology and brain-inspired ICT should be civilian and not deliberately work towards PSIM purposes. And to help maintain the balance on this fine line, they call for international regulation and ethics guidelines.

PSIM USE IS OF CONCERN

That neuroscience could have PSIM use, is cause for great concern. In the online consultation, only 11% did not have any concerns about PSIM use of neuroscience research, the same being true for 15% of the participants at the citizen workshops.

There are some general themes for these concerns. The citizens were concerned about privacy, surveillance and the vulnerability to hacking. One aspect of this was that the increased reliance on ICT-systems would increase the possible consequences of hacking. The other aspect was related to brain-computer interfaces, which, if hacked, could be used to control feelings and reactions, and potentially actions of the wearer. Both aspects contained concerns about consequences for privacy. On one hand, because of the increasing amount and types of data collected, but also because of its increasingly sensitive and deeply personal nature. Both aspects also make possible far more fine-grained and personal surveillance, which is still more difficult to evade.

Most find artificial intelligence (AI) and deep learning to be both a positive and a negative development, but it is still cause for concern among respondents. Its potential use on the battlefield of the future was cause for concern, as was its potential for creating more effective and widespread surveillance. In general, citizens were apprehensive of AI and less convinced about the positive potentials. In continuation of the above, there were general concerns that these technologies could be used for political and social manipulation and control. However, PSIM use was generally considered to be something which could not be prevented. If a PSIM organisation wanted to make use of neuroscience research, the citizens were convinced that they would do so, and that nothing they said or did could affect that.

ABOUT THE CONSULTATION

The consultation applied a mixed methodology approach. An in-depth online survey promoted in 10 European countries was combined with one-day workshops in eight European countries, to provide statistical generalizability along with detailed qualitative information.

The online consultation provided explanatory text and video, describing what neuroscience, neuro-technology and brain-inspired ICT is, what PSIM use is and historical examples hereof, and its relevance for an explicitly civilian research project like the HBP. In the first part of the survey, respondents were asked questions of a principal character in relation to neuroscience and PSIM use, and in the second part they were asked questions about three examples of how neuroscience research could be applied for both civilian and PSIM purposes.

At the citizen workshops the citizens discussed general aspects of neuroscience and possible PSIM use, examples of how neuroscience research could be applied for both civilian and PSIM uses in three areas, before posing questions that need to be addressed in the future and deciding who has to address them. Prior to the workshops, the citizens received information about the HBP, PSIM use and why it is relevant to discuss it in context of a civilian neuroscience research project like the HBP as well as information about the three examples of applied neuroscience research.

The consultation, sought to ensure demographic representativity of the engaged in terms of age, gender, area of living and level of education.

CONCERNS NOT LIMITED TO PSIM USE

Many of the concerns raised about PSIM use of neuroscience research were mirrored in corresponding concerns about civilian misuse. For instance, privacy and surveillance was also mentioned in relation to private corporations, just

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like AI was seen as something that could also be abused by private actors. So, while PSIM use was a key cause for concern, the concerns were not limited to that specific topic. This is also clear from the fact that, the citizens also had further concerns about potential wider societal consequences. For instance, that results of this research could affect societal perceptions of normality, so what is today considered normal behaviour, abilities or emotions could come to be considered inferior, deviant or pathological, because of new ways of manipulating the human psyche and body. Extrapolating from this, there were concerns about dehumanization of society, in terms of less reliance on human judgement and work force, and about a gradual development towards human behaviour mimicking computers; as society is increasingly shaped by computers, so will human behaviour be. Similarly, developments in AI and medicine could lead to questioning what it means to be human.

Not who, but how

That concerns about nefarious civilian use of the research was almost as frequent as concerns about PSIM use, is indicative of a pivotal conclusion: To those participating in the citizen consultation, it matters less *who* uses neuroscience research, than *how* they use it. While it is clear, that the fact that neuroscience research could find PSIM use is a ause for concern, it is also clear that the citizens do not reject PSIM use en bloc.

This is particularly substantiated by the fact that almost all respondents to the online consultation were in favour of at least one PSIM example of how neuroscience research could be used.

This supports the suggestion by the Ethics and Society subproject 12 of the HBP, to not focus on PSIM use in general, but on PSIM use of concern.

Benefits outweigh concerns

Both parts of the consultation focused on three examples of how research in neuroscience, neuro-technology and brain-inspired ICT could be applied: Medicine, brain-computer interfaces (BCI) and AI (deep learning). For all three examples, the applications that were found most acceptable were ones related to medicine and improvement of physical and mental health. It is not surprising, then, that of the three examples, medicine was the one that was most widely endorsed. While the positive aspects of both AI and BCI were found to outweigh the negative ones, there were far more concerns about them. Particularly AI (deep learning) was controversial, because of its potential consequences for privacy and worries about abilities to control and understand it, as well as its potential use on the battlefield of the future.

While research, as that being conducted in the HBP, was considered very important, and the general attitude was that the potential benefits outweighs the potential negative consequences, it is important not to slight the significance of the concerns expressed by the citizens. These concerns should be taken seriously and addressed by the HBP and similar research projects, if they are to enjoy continued public support and acceptance of the research they carry out.

Ethics and Society in HBP

The Ethics and Society subproject (SP12) is part of the HBP's research core. Through research and ethics management, it promotes Responsible Research and Innovation practices within HBP.

It helps shape the direction of the HBP in ethically sound ways that serve the public interest and carries out research to identify and address the conceptual, social, ethical, legal and cultural implications and challenges raised by HBP research. This is done by focusing on foresight, neuroethics, philosophy, public engagement, and researcher awareness.

SP12 is also in charge of putting ethics research into practice by implementing ethics management and compliance programs for the HBP. SP12 collaborates with an independent Ethics Advisory Board (EAB) and produces Opinions on the most immediately relevant ethical issues within the HBP.

SP12 director is Prof. Kathinka Evers, Uppsala University; Deputy-director is Lars Klüver, Director of The Danish Board of Technology.

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The DBT leads the HBP SP12 engagement activities with stakeholders and the general public.

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Human Brain Project

Ethics & Society

Work Package Leader 12.1:
Nikolas Rose - Kings College London

This WP identifies potential ethical and social concerns at an early stage by producing scenarios of potential developments and implications, produces reports and publications, and feeds these back to the HBP researchers to build capacity to adapt to differing uncertain futures.

Work Package Leader 12.2:
Kathinka Evers - Uppsala University

WP 12.2 performs philosophical, ethical and social analyses of key activities and issues, thereby contributing to epistemological developments in the HBP in ethics, neuro- and computational sciences; and reflective capacity of HBP researchers and others in addressing societal impacts.

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